

RECEIVED
CENTRAL FAX CENTER
JUN 18 2008

Serial Number 10/674,234
Docket Number YOR920030485US1
Amendment4 Page 2 of 7

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method comprising steps of:
 - A) deriving a suspect region exhibiting problematic data structure evolution in a running application;
 - B) periodically traversing only selected subgraphs of the suspect region to a depth of one, in order to detect data structure changes, wherein a data structure is a subgraph of an object reference graph snapshot and the subgraph comprises nodes that own constituents;
 - C) characterizing the data structure changes;
 - D) updating a histogram of the suspect region with the characterizations of the data structure changes, wherein updating the histogram comprises:
 - 1) allocating one row for each suspect region; and
 - 2) storing, for each suspect region:
 - a ranking of the suspect region;
 - a proxy-size of the suspect region; and
 - a summary of attributes of a last change detected and previous n changes detected;

Serial Number 10/674,234
Docket Number YOR920030485US1
Amendment4 Page 3 of 7

addition updates were detected;

ii) classifying the suspect region as an oscillator if a substantially equal distribution of addition and removal updates were detected;

iii) classifying the suspect region as a shrinker if only removal updates were detected; and

iv) classifying the suspect region as a flatliner if no updates were detected;

E) using the characterized data structure changes to describe, characterize, and identify an evolutionary trend of the suspect region as a whole; and

F) reporting the characterized changes to the region to an analysis agent.

2. (Cancelled)

3. (Original) The method of claim 1 used to detect one of the following changes to a region: additions to a region; removals from a region; and internal restructuring within a region.

4. (Currently amended) The method of claim 1 wherein step B) further comprises selecting the selected subgraphs to traverse ~~are derived by~~ computing region keys for the constituents of the data structure; and identifying a unique set of paths from owner proxy to change proxy as the set of traversals.

5. (Previously presented) The method of claim 4 wherein the traversals are shortened by

Serial Number 10/674,234
Docket Number YOR920030485US1
Amendment4 Page 4 of 7

identifying a subpath of a path which is unlikely to change as the region evolves;
and

trimming the path to exclude parts of the path which are unlikely to change.

6. (Previously presented) The method of claim 1 wherein determining how the suspect region evolves is a continuous and adaptive process.

7. (Previously presented) The method of claim 6 wherein the process is made continuous and adaptive by

identifying a set of desired updates; and

adjusting an interval in between traversals based on whether the desired updates have been witnessed.

8. (Previously presented) The method of claim 6 wherein the process is made continuous and adaptive by

identifying a set of desired updates; and

adjusting a frequency of sampling any one traversal based on whether that traversal has detected desired updates.

9. (Currently amended) The method of claim 6 wherein the process is made continuous and adaptive by implementing one of the following procedures based on the result of performing a traversal: adding new traversals; removing existing traversals; and modifying ~~the~~ a path of existing traversals.

10. (Currently amended) The method of claim 1 further comprising

Serial Number 10/674,234
Docket Number YOR920030485US1
Amendment4 Page 5 of 7

G) updating qualitative characterizations of the suspect regions under analysis based on structural changes to the regions as a whole.

11. (Currently amended) The method of claim 1 further comprising

G) updating quantitative characterizations of the regions under analysis based on structural changes to the regions as a whole.

12-13 (cancelled)

14. (Previously presented) The method of claim 6 further comprising using the evolutionary trend to update rankings of regions exhibiting problematic data structure evolution.

15. (Canceled)

16. (Canceled)